

In the event the actual fee is greater than the payment submitted or is inadvertently not enclosed or if any additional fee during the prosecution of this application is not paid, the Patent Office is authorized to charge the underpayment to Deposit Account No. 15-0700.

CONTINGENT EXTENSION REQUEST

If this communication is filed after the shortened statutory time period had elapsed and no separate Petition is enclosed, the Commissioner of Patents and Trademarks is petitioned, under 37 C.F.R. §1.136(a), to extend the time for filing a response to the outstanding Office Action by the number of months which will avoid abandonment under 37 C.F.R. §1.135. The fee under 37 C.F.R. § 1.17 should be charged to our Deposit Account No. 15-0700.

IN THE CLAIMS:

Please amend claim 3 as follows:

3. (Amended) The power generating system according to claim 1, [wherein the power generating system] further including:
condenser means for condensing a desired portion of the vapor from the working fluid; and
exhaust means for exhausting the remaining portion of the working fluid.

Please amend claim 4 as follows:

4. (Amended) The power generating system according to claim 1 further including:
condenser means for condensing the vapor from the working fluid exiting the work engine back to
a vaporizable liquid,
recycle means for delivering said vaporizable liquid to the liquid injection means, and
exhaust means for exhausting the remainder of the working fluid [to the compressor for
recompression].

Please amend claim 6 as follows:

6. (Amended) The power generating system according to claim 1 wherein the work engine receiving the [work] working fluid is selected from the group consisting of [one or more of] a steam turbine, gas turbine, reciprocating, Wankel, and cam [engine] engines, and shaft drive units.

Please amend claim 7 as follows:

7. (Amended) The power generating system according to claim 1, wherein the compressor and work engines are turbine type devices, and wherein said devices are connected by at least one shaft.

Please amend claim 9 as follows:

9. (Amended) The power generating system according to claim 1, wherein the combustion controller [control means] controls the liquid injection means and fuel injection means during combustion such that the [weight] mass flow of injected liquid is at least about two times the [weight] mass flow of injected fuel so that the quantity of delivered vaporizable liquid is controlled to maintain the average temperature of the working fluid delivered to a desired work engine to a desired operating temperature.

Please amend claim 10 as follows:

10. (Amended) The power generating system according to claim 9, wherein the combustion [control means] controller controls the air flow and fuel injection means such that the ratio of weight of injected fuel to weight of injected air is from about 0.03 to about 0.066 during combustion.

Please amend claim 12 as follows:

12. (Amended) The power generating system according to claim 9, wherein:
the combustion temperature is controlled by the combustion [control means] controller so that the air to fuel ratio is selected to obtain stoichiometric burning and
the temperature of the working fluid is adjusted by controlling the delivery of the quantity of non-flammable vaporizable liquid, the temperature adjustment being provided substantially only by the latent heat of vaporization of said liquid.

Please amend claim 14 as follows:

14. (Amended) The power generating system according to claim 9, wherein the pressure of the compressed air is maintained at a pressure of 4 to 100 atmospheres[, while entropy of the engine is held substantially constant].

Please amend claim 15 as follows:

15. (Amended) The power generating system according to claim 1, wherein the pressure of the compressed air is maintained constant while the temperature of combustion and the quantity of working fluid is varied[,] by the combustion controller by adjustment of the quantity of non-flammable vaporizable liquid fed to one or more liquid injection means located throughout the combustion chamber.

Please amend claim 18 as follows:

18. (Amended) The power generating system according to claim 1 wherein the liquid injected into the combustion chamber is water which is transformed into steam and which cools the combustion products [are cooled substantially, solely by the latent heat of vaporization of water].

Please amend claim 20 as follows:

20. (Amended) The power generating system according to claim 18 wherein the injected water is transformed by way of a flash process into steam [at the pressure of the combustion chamber without additional work for compression and without additional entropy].

Please amend claim 21 as follows:

21. (Amended) The power generating system according to claim 18, wherein the engine is a power turbine powered by the working fluid [consisting essentially of steam, unoxidized nitrogen, inert gases in the compressed air, carbon dioxide and non-flammable components of the fuel] comprising steam, nitrogen, inert gases, carbon dioxide, excess oxygen, un-burned components of the fuel, and pollutants.

Please amend claim 23 as follows:

23. (Amended) The power generating system according to claim 1 wherein the fuel injection means comprises at least one nozzle located [in] to deliver fuel into the combustion chamber, said nozzle being fed by a pressurized fuel supply.

Please amend claim 26 as follows:

26. (Amended) The power generating system according to claim [24] 25 further including a condenser for collecting potable water after the non-potable water has been vaporized in the combustion chamber.

Please cancel claim 27 without prejudice.

Please amend claim 30 as follows:

30. (Amended) The method of claim 29 further including the step of igniting the fuel using an [ignition sparker] igniter.

Please amend claim 31 as follows:

31. (Amended) The method of claim 29, [wherein the power generating system] further [includes] including the steps of:
condensing a desired portion of the vapor from the working fluid; and
exhausting the remaining portion of the working fluid.

Please amend claim 32 as follows:

32. (Amended) The method of claim 29, wherein the power generating system further includes the steps of:
condensing the vapor from the working fluid,
delivering at least a portion of the condensed vapor back into the combustor, and
delivering at least a portion of the remainder of the working fluid to [the] a downstream compressor for recompression.

Please amend claim 35 as follows:

35. (Amended) The method of claim 29, wherein the amount of liquid and fuel injected is controlled during combustion such that the ratio of weight of injected liquid to weight of injected fuel is at least about two to one so as to control the average temperature in the combustion chamber to a [deliver] desired work engine operating temperature.

Please amend claim 41 as follows:

41. (Amended) The method of claim 29, wherein the pressure of the compressed air is maintained constant while the temperature and quantity of working fluid [is] are varied.

Please amend claim 43 as follows:

43. The method of claim 29 wherein;
the liquid injected into the combustion chamber is water which is transformed into steam following injection into the combustion chamber; and
the temperature in the combustion chamber is controlled substantially [totally] by way of [the latent heat of vaporization of] such water.

Please amend claim 46 as follows:

46. The method of claim 43, wherein the working fluid is comprised [substantially only] of steam, unoxidized nitrogen, [non-flammable] unburned components of the compressed air and fuel, and carbon dioxide.

Please amend claim 52 as follows:

52. (Amended) A process of continuously delivering a working fluid to the exit of [an engine] a combustion chamber, the working fluid having enhanced power generating capacity when compared with [the] working fluid produced [by an engine] in a combustion chamber operating only with a fuel and air feed, comprising:

- a) creating a combustible mixture by continuously combining fuel under pressure and compressed air in the combustion chamber, the air being [fed in a fixed ratio to the fuel, the fixed ratio providing air] provided in at least a stoichiometric quantity,
- b) igniting the combustible mixture to create a continuously burning flame which produces a hot gas stream [of] including combustion products [having a pressure at least as great as the pressure of the compressed air], and
- c) injecting a vaporizable, [non-flammable] liquid thermal diluent into the hot gas stream to reduce the temperature of the hot gas stream,

[the liquid prior to being injected being maintained at a pressure in excess of the pressure in the combustion chamber to maintain the non-flammable liquid in a liquid state prior to injection into the combustion temperature]
the injected [inert] liquid thermal diluent rapidly becoming a [flashing to] vapor [immediately] upon entering the combustion chamber,
the combination of the hot gas stream and vapor constituting the working fluid,
the quantity [of inert liquid] and the temperature of the [inert liquid] thermal diluent being selected to produce a [preset] desired temperature in the working fluid at the exit of the combustion chamber,
the temperature and dwell time of the hot gas stream [of combustion products] being controlled to cause substantially full combustion of the fuel while the temperature of the working fluid is controlled to minimize formation of nitrogen oxides and maximize formation of carbon dioxide,
the process continuing until the need for delivery of the working fluid ceases to exist.

Please amend claim 53 as follows:

53. (Amended) The process of claim 52 wherein the quantity of compressed air entering the combustion chamber is slightly in excess of the stoichiometric [amounts] amount so that at least about 95% of the available oxygen in the air is consumed in the burning of the combustible mixture.

Please amend claim 54 as follows:

54. (Amended) The process of claim 52 wherein the [liquid] thermal diluent is water and the temperature of the working fluid exiting the combustion chamber is controlled to a selected temperature between about 750° F. and about 2500° F. by the injection of the water.

Please amend claim 55 as follows:

55. (Amended) The process of claim 54 wherein the temperature of the working fluid exiting the combustion chamber is controlled to a selected temperature between about [1800° F] 982° C (1800° F) and about [2200°] 1204° C (2200° F) by the injection of the water.

Please amend claim 56 as follows:

56. (Amended) The process of claim 54 wherein the temperature of the water just prior to injection is [at a temperature] not more than about 50° F. below that of the working fluid exiting the combustion chamber.

Please amend claim 57 as follows:

57. (Amended) The process of claim 52 further including, after step c), directing the working fluid into a turbine power generator, and employing at least a part of the working fluid exiting the turbine [being used] to heat the [non-flammable liquid] thermal diluent prior to injection into the [working fluid] combustion chamber.

Please amend claim 58 as follows:

58. (Amended) The process of claim 57 wherein the oxygen-containing fluid is air, the fuel is diesel oil number 2, the [f/a] fuel to air ratio is 0.066, and for every 1 pound per second of air feed the turbine power generator produces in excess of 650 horsepower at a fuel efficiency in excess of about 36 percent and [an sfc] a specific fuel consumption of less than about 0.36.

Please amend claim 60 as follows:

60. (Amended) The process of claim 57 wherein the oxygen-containing fluid is air, and for every 1 pound per second of air feed the turbine power generator produces in excess of 750 horsepower at a fuel efficiency in excess of about 42 percent and [an sfc] a specific fuel consumption of less than about 0.32.

Please amend claim 61 as follows:

61. (Amended) The process of claim 52 wherein the [inert liquid] thermal diluent is non-potable water and the process further includes the steps of: [collection of] collecting inorganic materials dissolved in the non-potable water in the combustion chamber, and [the conversion of] converting the inorganic materials to a solid form.

Please amend claim 62 as follows:

62. (Amended) The power generating system of claim 1 further including at least one heat transfer means positioned external and circumferential to the combustion chamber and extending along a substantial portion of the length of the combustion chamber such that the compressed air flows over external surfaces of the combustion chamber prior to entering the combustion chamber, the temperature of the compressed air being elevated by heat [radiated] from said external surfaces.

Please amend claim 63 as follows:

63. (Amended) The power generating system of claim 62 wherein the heat transfer means comprises at least two contiguous [circumferential] circumferential chambers.

Please amend claim 64 as follows:

64. (Amended) A power generating system comprising

- a) a combustion chamber,
- b) a work engine coupled to the combustion chamber,
- c) fuel supply means for delivering fuel to the combustion chamber,
- d) air supply means for delivering compressed air at an elevated temperature and [at a constant] pressure to the combustion chamber the amount of air being chosen so that at least about 90% of the oxygen in the air is consumed when burned with the fuel, the fuel and air being mixed in the combustion chamber,
- e) [control] means for controlling the delivery [to vary the quantity] of air [supplied to the combustion chamber] and [to adjust the amount of fuel supplied] fuel to the combustion chamber so that the fuel to air ratio remains about constant,
- f) a fuel igniter for igniting the mixture of fuel and air to produce a combustion vapor stream,
- g) liquid supply means for delivering superheated water under pressure to the combustion chamber, the water being converted substantially instantaneously upon entering the combustion chamber to steam,

the delivery and formation of steam creating turbulence and mixing in the combustion chamber resulting in a working fluid composed of steam, combustion products and non-flammable materials in the air and fuel, said working fluid being delivered to the work engine,

- h) a combustion chamber temperature controller,

said controller delivering the superheated water to the combustion chamber in quantities sufficient to maintain the temperature of the working fluid at a desired level, [substantially all of the control of the temperature in the combustion chamber being derived from the latent heat of vaporization of the water introduced into the combustion chamber,] and

i) heat exchanging means for transferring heat from the working fluid exiting the work engine to the water,

said heat elevating the temperature of the water from a feed temperature to the desired temperature for delivery to the combustion chamber.

Please amend claim 65 as follows:

65. (Amended) The process of claim 64, also including the step of delivering additional [non-flammable liquid] superheated water to the compressed air prior to introduction of the compressed air into the combustion chamber.

Please cancel claims 67-74 without prejudice.

Please amend claim 75 as follows:

75. (Amended) A generating system comprising

- a) a combustion chamber,
- b) fuel supply means for delivering fuel to the combustion chamber,
- c) air supply means for delivering compressed air at an elevated temperature and [at a constant] pressure to the combustion chamber the amount of air being chosen so that at least about 90% of the oxygen in the air is consumed when burned with the fuel, the fuel and air being mixed in the combustion chamber,
- d) control means to vary the quantity of air supplied to the combustion chamber and to adjust the amount of fuel supplied to the combustion chamber so that the fuel to air ratio remains [about constant] within a desired range,
- e) a fuel igniter for igniting the mixture of fuel and air to produce a combustion vapor stream,
- f) liquid supply means for delivering superheated water under pressure to the combustion chamber, at least part of the water being rapidly converted to steam [substantially instantaneously] upon entering the combustion chamber [to steam], the delivery and formation of steam creating

turbulence and mixing in the combustion chamber resulting in a working fluid composed of steam, combustion products unreacted components of the air and [non-flammable materials in the air and] unburned fuel,

said working fluid being a high temperature [steam] stream deliverable to an external piece of equipment at a controlled pressure required by that external piece of equipment,

g) a combustion chamber temperature controller, said controller delivering the superheated water to the combustion chamber in quantities sufficient to maintain the temperature of the working fluid at a desired level,

[substantially all] most of the control of the temperature in the combustion chamber being derived from [the latent heat of vaporization] a change in enthalpy of the water introduced into the combustion chamber, and

h) heat exchanging means for transferring heat from the working fluid exiting the [work engine] external piece of equipment to the water, said heat elevating the temperature of the water from a feed temperature to [the] a desired temperature for delivery to the combustion chamber.

Please add the following new claims:

77. (New) The power generating system according to claim 1, wherein the amount of water injection and the amount of compressed air combusted are kept constant.

78. (New) The power generating system according to claim 1, wherein the water to fuel ratio is increased as the amount of excess air is decreased.

79. (New) The power generating system according to claim 1, wherein the ratio of injected water to fuel is held constant and the amount of compressed air combusted is held constant.

80. (New) The power generating system according to claim 4, further including a compressor to recompress and exhaust the remainder of the working fluid to at least ambient pressure.

81. (New) The method of claim 29, wherein at least 81% of the oxygen in the compressed air is combusted in the combustion chamber.

82. (New) The power generating system according to claim 1 further including at least a second work engine coupled to receive working fluid from the combustor.

83. (New) The power generating system according to claim 1, further including at least one temperature detector operative to determine temperature in the combustion chamber.

84. (New) The power generating system according to claim 1, wherein:
the combustion controller is operative to select the air to fuel ratio to obtain stoichiometric burning
and
the temperature of the working fluid is adjusted by controlling the delivery of the quantity of
non-flammable vaporizable liquid, the temperature adjustment being provided substantially
by the vaporization of said liquid.

85. (New) The power generating system of claim 1, further including at least one heat transfer device positioned circumferentially around to the combustion chamber and extending along a substantial portion of the length thereof,
the heat exchange device being constructed and configured such that the compressed air flows
therethrough over external surfaces of the combustion chamber prior to entering the
combustion chamber,
the temperature of the compressed air being elevated by heat from the external surfaces.

86. An energy conversion system comprising:
a source of oxygen-containing fluid;
a source of fuel;
a source of thermal diluent fluid;
a combustor including a combustion chamber, at least one inlet, and an outlet;
delivery devices operative to deliver oxygen-containing fluid, fuel, and thermal diluent fluid from
the sources thereof into the combustor;

the combustor being operative to combust at least a portion of the delivered fuel with at least a portion of the delivered oxygen, to generate an energetic fluid comprising thermal diluent, combustion products, and any unreacted components of the fuel and the oxygen-containing fluid, and to deliver the energetic fluid to the outlet; and
a controller operative to control the delivery of oxygen-containing fluid, fuel, and thermal diluent fluid so that at least one pollutant is below a desired concentration in the energetic fluid exiting the combustor, and to control temperature in the combustor,
the combustor outlet being constructed and configured to be coupled to a utilization device to deliver energetic fluid thereto.

87. (New) The energy conversion system according to claim 86 further including an igniter operable to ignite the fuel and oxygen.

88. (New) The energy conversion system according to claim 81, wherein the controller is operative to deliver a quantity of oxygen-containing fluid to the combustor such that a substantial portion of the oxygen therein is consumed when reacted with the fuel.

89. (New) The energy conversion system according to claim 86, wherein the source of oxygen-containing fluid is a compressor configured to compress ambient air into compressed air having a pressure and temperature greater than ambient.

90. (New) The energy conversion system according to claim 89, wherein the pressure of the oxygen-containing fluid is at least about four atmospheres.

91. (New) The energy conversion system according to claim 89, wherein the delivery device for the thermal diluent is operative to atomize and inject a portion of the thermal diluent into the feed air entering the compressor inlet.

92. (New) The energy conversion system according to claim 89, wherein the controller is operative to control the delivery of air, fuel, and thermal diluent to the combustor such that the mass

flow of the energetic fluid exiting the combustor substantially exceeds the mass flow of the air through the compressor.

93. (New) The energy conversion system according to claim 89, wherein the air delivered to the combustor is at a pressure between about 4 to about 100 times ambient pressure.

94. (New) The energy conversion system according to claim 86, wherein the combustion chamber is comprised of:

a first burner zone located at the up-stream end of the combustion chamber; and
at least one additional burner zone located down-stream of the first burner zone; and wherein:
the delivery device for the oxygen-containing fluid is operative to admit a portion of the total available oxygen-containing fluid into the first burner zone and to admit the remainder of the total available oxygen-containing fluid into the one or more downstream burner zones.

95. (New) The energy conversion system according to claim 94, wherein the delivery device for the oxygen-containing fluid is comprised of:

a first feed mechanism operative to admit approximately 50% of the total available oxygen-containing fluid into the first burner zone; and
a second feed mechanism operative to admit the remaining available oxygen-containing fluid into the one or more downstream burner zones.

96. (New) The energy conversion system according to claim 95, wherein the combustion chamber is further comprised of:

a third burner zone downstream of the second burner zone;
and a fourth burner zone downstream of the third burner zone;
and further wherein:
the first feed mechanism provides approximately 50% of the total available oxygen-containing fluid to the first burner zone and
the second feed mechanism provides 25% of the total available oxygen-containing fluid to the second burner zone, 12.5% of the total available oxygen-containing fluid to the third burner zone and 12.5% of the total available oxygen-containing fluid to the fourth burner zone.

97. (New) The energy conversion system according to claim 96, wherein the delivery device for the thermal diluent includes a plurality of injectors for injecting thermal diluent at multiple locations downstream of the fourth burner zone.

98. (New) The energy conversion system according to claim 94, wherein the delivery device for the thermal diluent includes at least one injector for delivering thermal diluent to the oxygen-containing fluid prior to introduction of the oxygen-containing fluid into the combustion chamber.

99. (New) The energy conversion system according to claim 94, wherein the delivery device for the thermal diluent includes a plurality of injectors for injecting thermal diluent into the combustor at multiple locations downstream of all of the burner zones.

100. (New) The energy conversion system according to claim 86, further including:
a heat exchanger,
an upstream end of which is coupled to the source of oxygen-containing fluid, and is configured to receive oxygen-containing fluid therefrom;
a downstream end of which is in communication with the delivery device for the oxygen-containing fluid; and
which is operative to deliver oxygen-containing fluid to the delivery device after it has passed through the heat exchanger.

101. (New) The energy conversion system according to claim 100, wherein the delivery device for the thermal diluent includes at least one injector for delivering thermal diluent to the downstream end of the heat exchanger, but at a location upstream of the location at which the oxygen-containing fluid is introduced into the combustion chamber.

102. (New) The energy conversion system according to claim 100, wherein:
the combustion chamber is comprised of a first tube and
the heat exchanger is comprised of a second concentric tube spaced from and surrounding the first tube,
the interior of the inner tube comprising the combustion chamber, and

the space between the first and second tubes comprising a channel through which the oxygen-containing fluid passes from the coupler to the first and second feed mechanisms.

103. (New) The energy conversion system according to claim 100, wherein:
the combustion chamber is comprised of a first tube;
the heat exchanger is comprised of:

a second concentric tube spaced from and surrounding the first tube, the space between the first and second tubes forming a first channel; and
a third concentric tube spaced from and surrounding the first and second tubes,
the space between the second and third tubes forming a second channel;
the upstream end of the second channel being connected to the coupler,
the downstream end of the second channel being connected to the upstream end of the first channel,
and
the downstream end of the first channel being connected to the first and second feed mechanisms,
the interior of the first tube comprising the combustion chamber and
the first and second channels comprising the path through which the oxygen-containing fluid travels from the coupler to the first and second feed mechanisms.

104. (New) The energy conversion system according to claim 103, wherein the delivery device for the thermal diluent includes at least one injector for delivering thermal diluent into the downstream end of the first channel.

105. (New) The energy conversion system according to claim 86, wherein:
the thermal diluent is non-potable water, and further including
a collector for inorganic materials which were contained in the non-potable water, and which have been carried by the energetic fluid.

106. (New) The energy conversion system according to claim 105, further including a condenser for collecting potable water from energetic fluid delivered to a utilization device.

107. (EPC claim 58) The energy conversion system according to claim 86 wherein:

the delivery device for the oxygen-containing fluid is operative to admit less than the stoichiometric amount of the available oxygen-containing fluid to a the first burner zone in the combustion chamber, and to admit the remaining available oxygen-containing fluid in the one or more additional burner zones downstream of the first burner zone; and
the delivery device for the fuel is operative to admit sufficient fuel to the first burner zone to create a fuel rich mixture therein.

108. (New) The energy conversion system according to claim 107, wherein:
the delivery device for the oxygen-containing fluid is operative to admit a largest portion of the oxygen-containing fluid into the first burner zone;
to admit a second largest portion of the total available oxygen-containing fluid in a second burner zone located downstream from the first burner zone (250), and
to admit the remainder of the available oxygen-containing fluid to the combustion chamber apportioned between one or more burner zones downstream of the second burner zone.

109. (New) The energy conversion system according to claim 86, further including a heat exchanger thermally coupled to the combustor, and operative to heat the oxygen-containing fluid prior to mixture with the fuel.

110. (New) The energy conversion system according to claim 86, wherein the energetic fluid received by the utilization device contains less than 3 ppm NO_x.

111. (New) The energy conversion system according to claim 86, wherein the energetic fluid received by the utilization device contains less than 3 ppm CO.

112. (New) The energy conversion system according to claim 86, wherein controller is operative to control the delivery of fuel, oxygen-containing fluid, and thermal diluent to the combustor so that the energetic fluid received by the utilization device contains substantially insignificant concentrations of environmental pollutants including NO_x, CO, particulates, and unburned fuel.

113. (New) The energy conversion system according to claim 86, wherein the total quantity of oxygen-containing fluid delivered to the combustor is selected so that at least about 81% of the available oxygen is consumed when it is reacted with the fuel.

114. (New). The energy conversion system according to claim 86, wherein the controller is operative to control the quantities of oxygen-containing fluid and fuel delivered to the combustor to maintain a desired air to fuel ratio.

115. (New) The energy conversion system according to claim 86, wherein the controller is operative to control the temperature and/or the temperature profile in the combustor by controlling the amount and location of the thermal diluent delivered.

116. (New) The energy conversion system according to claim 86, wherein the controller is operative to control the delivery of thermal diluent according to a desired maximum flame temperature.

117. (New) The energy conversion system according to claim 86, wherein the controller is operative to control the delivery of thermal diluent according to a desired mean combustor exit temperature of the energetic fluid.

118. (New) The energy conversion system according to claim 86, wherein the controller is operative to control the delivery of thermal diluent according to the desired peak temperature of the energetic fluid exiting the combustor independently of the rate of energy conversion in the combustor.

119. (New) The energy conversion system according to claim 86, wherein the controller is operative to control the delivery of thermal diluent to constrain the temperature of combustion and/or the temperature of the energetic fluid to achieve the desired level of nitrogen oxides exiting from the combustor.

120. (New) The energy conversion system according to claim 86, wherein the controller is operative to control the delivery of diluent fluid to maintain the energetic fluid temperature downstream of a first upstream burner zone to above a desired minimum, thereby achieving a desired level of oxidation of at least one combustible component and reducing at least one oxidizable component of emissions to less than a desired value.

121. (New) The energy conversion system according to claim 86, wherein the controller is operative to deliver a portion of the thermal diluent upstream of or within a region of combustion, or downstream of combustion, or near the combustor exit, or near the peak temperature location, or combinations thereof.

122. (New) The energy conversion system according to claim 86, wherein the controller is operative to control the temperature of the energetic fluid exiting the combustor independently of the enthalpy flow rate.

123. (New) The energy conversion system according to claim 86, wherein the controller is operative to constrain the temperature of the fluid within the combustor to below about 1427°C (2600°F).

124. (New) The energy conversion system according to claim 86, wherein the controller is operative to maintain the temperature of the fluid within the combustor above the desired combustor exit temperature for a residence time sufficient to achieve a carbon monoxide content of the energetic fluid exiting the combustor of 758 ppm or less.

125. (New) The energy conversion system according to claim 86, wherein the controller is operative to maintain the temperature of the fluid within the combustor above about 932°C (1800°F) for a sufficient residence time to oxidize the fuel to carbon dioxide to a desired degree.

126. (New) The energy conversion system according to claim 86, wherein the controller is operative to control the temperature of the energetic fluid to be between about 399°C (750°F) and about 1426°C (2600°F).

127. (New) The energy conversion system according to claim 86, wherein the delivery device for the thermal diluent is operative to deliver thermal diluent into the combustor at a plurality of axially spaced locations.

128. (New) The energy conversion system according to claim 86, wherein the delivery device for the thermal diluent is operative to deliver thermal diluent into the combustor at a plurality of peripherally spaced locations.

129. (New) The energy conversion system according to claim 86, wherein the delivery device for the thermal diluent is operative to deliver thermal diluent into the combustor at a plurality of spaced locations lying effectively in a plane.

130. (New) The energy conversion system according to claim 86, wherein the delivery device for the thermal diluent is operative to deliver thermal diluent into the combustor at a plurality of spaced locations positioned asymmetrically relative to the combustor axis of elongation.

131. (New) The energy conversion system according to claim 86, wherein the delivery device for the thermal diluent is operative to deliver thermal diluent into the combustor at an angle having a tangential component relative to the combustor wall.

132. (New) The energy conversion system according to claim 86, wherein the delivery device for the thermal diluent is operative to deliver thermal diluent into the combustor at an angle having an axial component relative to the combustor axis.

133. (New) The energy conversion system according to claim 86, wherein the controller is operative to control delivery of thermal diluent to constrain the temperature of an outer wall of the combustor to below a desired value.

134. (New) The energy conversion system according to claim 86, wherein the controller is operative to control the delivery of oxygen-containing fluid, fuel, and thermal diluent to the

combustor such that the mass flow of the energetic fluid exiting the combustor is substantially more than the mass flow of the oxygen-containing fluid delivered to the combustor.

135. (New) The energy conversion system according to claim 86, wherein the controller is operative to control the oxygen to fuel ratio to be within the range from 100% to 124% of the stoichiometric ratio.

136. (New) The energy conversion system according to claim 86, wherein the controller is operative to independently control the delivery of each of the fuel, oxygen-containing fluid, and thermal diluent to the combustor.

137. (New) The energy conversion system according to claim 86, wherein the controller is operative to control each of the combustion temperature and the temperature of the energetic fluid near the combustor exit independently of the ratio of fuel to oxygen-containing fluid.

138. (New) The energy conversion system according to claim 86, wherein the controller is operative to control the ratio of oxygen-containing fluid to fuel, the combustion temperature, the combustor temperature profile, and the temperature of the energetic fluid exiting the combustor independently of each other.

139. (New) The energy conversion system according to claim 86, wherein the controller includes a computerized feedback control system operative to monitor the energetic fluid and to control the feed rates of the oxygen-containing fluid, fuel and thermal diluent to minimize NO_x and CO in the energetic fluid.

140. (New) The energy conversion system according to claim 86, wherein the controller is operative to control the combustor temperature profile by controlling the delivery of thermal diluent into the combustor.

141. (New) The energy conversion system according to claim 86, wherein the controller is operative to independently control the locations at which thermal diluent is delivered to the combustor and the amounts of thermal diluent delivered at each location.

142. (New) The energy conversion system according to claim 86, wherein the controller is operative to control the temperature of the thermal diluent independently of the amount of thermal diluent delivered.

143. (New) The energy conversion system according to claim 86, further including a utilization device coupled to the combustor outlet.

144. (New) The energy conversion system according to claim 143, wherein the utilization device is an oil well or distillation tower, or other equipment which utilizes steam for operation.

145. (New) The energy conversion system according to claim 143, wherein the utilization device is operative to deliver energy for mechanical and/or thermal applications, including desalinization, generation of electricity, and operation of mobile devices.

146. (New) The energy conversion system according to claim 143, further including:
a cooler operative to cool energetic fluid exiting the utilization device;
a condenser connected to receive the cooled energetic fluid exiting the cooler and operative to condense at least a portion of the thermal diluent exiting the cooler;
a separator operative to extract at least a portion of the condensed thermal diluent from the cooled energetic fluid;
a compressor operative to recompress the energetic fluid after extraction of the condensed thermal diluent at least to ambient pressure;
a recovery device operative to recover at least a portion of the extracted thermal diluent; and
an exhaust device operative to exhaust the recompressed energetic fluid and any unextracted condensed thermal diluent fluid.

147. (New) The energy conversion system according to claim 146, wherein the amount of recovered thermal diluent is at least equal to the amount delivered to the combustor outlet.

148. (New) The energy conversion system according to claim 146, further including purifying apparatus operative to purify at least part of the recovered thermal diluent for recycling.

149. (New) The energy conversion system according to claim 86, wherein controller is operative to control the ratio of thermal diluent to fuel delivered to the combustor to be within the range from about 2 to 1 to about 16 to 1 by mass.

150. (New) The energy conversion system according to claim 86 further including one or more additional combustion chambers receiving oxygen-containing fluid, fuel and vaporizable thermal diluent configured such that energetic fluid therefrom is delivered to one or more work engines.

151. (New) The energy conversion system according to claim 86 further including at least a second utilization device coupled to receive energetic fluid from the combustor.

152. (New) The energy conversion system according to claim 86, further including at least one temperature detector operative to determine temperature in the combustion chamber.

153. (New) The energy conversion system according to claim 86, wherein the combustion controller controls the delivery devices for the fuel and thermal diluent during combustion such that the mass flow of delivered thermal diluent is at least about two times the mass flow of delivered fuel.

154. (New) The energy conversion system according to claim 86, wherein:
the combustion controller is operative to control the delivery of oxygen-containing fluid and fuel to obtain substantially complete burning; and
the temperature of the energetic fluid is adjusted by controlling the delivery of the quantity of vaporizable thermal diluent, the temperature adjustment being provided substantially by the vaporization of the thermal diluent.

155. (New) The energy conversion system according to claim 86, wherein the delivery device for the oxygen-containing fluid is operative to deliver the oxygen-containing fluid to the combustor at temperature and pressure above ambient.

156. (New) The energy conversion system according to claim 86, wherein the delivery device for the oxygen-containing fluid is operative to deliver the oxygen-containing fluid to the combustor is at a pressure between about 4 to about 100 times ambient pressure.

157. (New) The energy conversion system according to claim 86, wherein the controller is operative to control delivery of thermal diluent so the temperature of an inner wall of the combustor is at least 1093° C (2000° F).

158. (New) The energy conversion system according to claim 86, wherein the controller is operative to independently control the ratio of oxygen-containing fluid to fuel and the ratio of thermal diluent fluid to fuel so the energetic fluid exits the combustor at about a desired temperature.

159. (New) The energy conversion system according to claim 86, wherein the controller is operative to control the ratio of oxygen containing fluid to fuel to have about a first selected value and to control the ratio of the thermal diluent to fuel to have about a second different selected value.

160. (New). The energy conversion system according to claim 86, wherein the thermal diluent comprises essentially water.

161. (New) A method of operating an energy conversion system comprising a combustor including a combustion chamber, one or more fluid inlets, and a fluid outlet, the method comprising the steps of:
delivering an oxygen-containing fluid, fuel, and a thermal diluent fluid to the combustor through one or more inlets;
combusting at least a portion of the delivered oxygen and at least a portion of the delivered fuel to form a combusting fluid;

mixing the combusting fluid with thermal diluent fluid to form an energetic fluid comprising thermal diluent fluid, combustion products, any uncombusted fuel, and oxygen-containing fluid;
controlling the delivery of oxygen-containing fluid, fuel and thermal diluent fluid so that the energetic fluid exiting the combustor includes a pollutant content below a desired concentration, and to control temperature in the combustor; and
delivering the energetic fluid through the combustor outlet to a utilization device.

162. (New) The method of claim 161 wherein the oxygen-containing fluid is delivered at an elevated pressure.

163. (New) The method of claim 161, wherein the oxygen-containing fluid is delivered to the combustor at a pressure in the range of about four to one hundred times the ambient pressure.

164. (New) The method of claim 161, wherein the oxygen-containing fluid is delivered to the combustor at a pressure in the range of about 22 to about 50 times the ambient pressure.

165. (New) The method of claim 161, wherein the step of controlling the delivery of the fluids includes maintaining the ratio of oxygen-containing fluid to fuel and the ratio of thermal diluent to fuel substantially constant.

166. (New) The method of claim 161, wherein the fuel and oxygen are combusted in the combustion chamber.

167. (New) The method of claim 161, wherein the energetic fluid is at least partially formed in the combustion chamber.

168. (New) The method of claim 161, wherein the combustor includes an enclosure around the combustion chamber, and further including the step of insulating the enclosure from heat from the combustion chamber.

169. (New) The method of claim 168, wherein the differential pressure across the combustion chamber wall is maintained at less than 3.5% of the pressure of the oxygen-containing fluid entering the combustor.

170. (New) The method of claim 168, wherein the differential pressure between the combustor inlet for the oxygen-containing fluid and the outlet of the combustor is maintained at less than 3.5% of the pressure of the oxygen-containing fluid entering the combustor.

171. (New) The method of claim 161, wherein the quantities of oxygen-containing fluid and fuel delivered to the combustion chamber are selected to maintain a desired ratio of oxygen-containing fluid to fuel.

172. (New) The method of claim 161, wherein the total quantity of oxygen-containing fluid delivered to the combustion chamber is selected so that at least about 90% of the available oxygen is consumed when oxygen-containing fluid is reacted with the quantity of fuel delivered.

173. (New) The method of claim 161, wherein the delivery of fuel and the oxygen-containing fluid are so controlled that the ratio of oxygen to fuel is in the range of about 100 percent to about 200 percent of the stoichiometric ratio.

174. (New) The method of claim 161, wherein the delivery of fuel and the oxygen-containing fluid are controlled that the ratio of oxygen to fuel is in the range of 101 percent to about 124 percent of the stoichiometric ratio.

175. (New) The method of claim 161, wherein the step of controlling the delivery of fluid further includes the controlling the ratio of thermal diluent fluid to fuel in accordance with changes in the ratio of oxygen to fuel.

176. (New) The method of claim 161, wherein the step of controlling delivery of fluid includes the step of controlling the ratio of thermal diluent flow to fuel flow to be greater than a

desired value, whereby a portion of the oxygen-containing fluid flow in excess of the stoichiometric flow is replaced by thermal diluent fluid.

177. (New) The method of claim 161, wherein the step of controlling delivery of fluid includes the step of maintaining the ratio of thermal diluent fluid to fuel to be at least 2:1 by mass.

178. (New) The method of claim 161, wherein the ratio of thermal diluent to fuel is maintained within a range of about 2 to 1 to about 16 to 1 by mass.

179. (New) The method of claim 161, wherein the step of controlling the delivery of fluid includes varying the ratio of thermal diluent to fuel oppositely to changes in the ratio of oxygen-containing fluid to fuel.

180. (New) The method of claim 161, wherein:
the combustion chamber includes a first upstream burner zone, and one or more additional burner zones downstream of the first burner zone; and
the step of controlling the delivery of fluid includes:
delivering less than the stoichiometric amount of oxygen-containing fluid for mixture with fuel in the first burner zone to form a fuel rich mixture therein, and
delivering the remaining available oxygen-containing fluid for mixture with fuel in the one or more additional burner zones.

181. (New) The method of claim 180, wherein about 50% of the available oxygen-containing fluid is mixed with the fuel in the first burner zone.

182. (New) The method of claim 180, wherein:
about 50% of the available oxygen-containing fluid is mixed with the fuel in the first burner zone
(250) thereby creating a fuel rich flame in the first burner zone;
about 25% of the available oxygen-containing fluid is added to the combustion chamber in the second burner zone;

about 12.5% of the total available oxygen-containing fluid is added to the combustion chamber in a third burner zone located downstream from the second burner zone; and the remainder of the available oxygen-containing fluid is added to the combustion chamber in a fourth burner zone located downstream from the third zone.

183. (New) The method of claim 180, wherein:
a largest portion of the available oxygen-containing fluid is mixed with sufficient fuel in the first burner zone to create a fuel rich mixture therein;
a second largest portion of the available oxygen-containing fluid is added to the combustion chamber in the second burner zone; and
the remainder of the available oxygen-containing fluid is added to the combustion chamber apportioned between one or more burner zones downstream of the second burner zone.

184. (New) The method of claim 161, wherein the step of delivering the fluids into the combustor includes the step of mixing a controlled amount of thermal diluent fluid with the oxygen-containing fluid prior to combusting the oxygen-containing fluid with the fuel.

185. (New) The method of claim 161, wherein the step of delivering the fluids to the combustor includes the step of injecting controlled amounts of the thermal diluent at multiple locations in the combustion chamber.

186. (New) The method of claim 161, wherein at least part of the thermal diluent fluid is delivered downstream of the combustion chamber.

187. (New) The method of claim 161, wherein part of the thermal diluent fluid is delivered upstream of the combustion chamber.

188. (New) The method of claim 161, wherein at least part of the thermal diluent is delivered to the combustor at a plurality of axially spaced locations.

189. (New) The method of claim 188, wherein at least some of the axially spaced locations lie effectively in a plane.

190. (New) The method of claim 161, wherein at least part of the thermal diluent is delivered to the combustor at a plurality of peripherally spaced locations.

191. (New) The method of claim 190, wherein at least some of the peripherally spaced locations lie effectively in a plane.

192. (New) The method of claim 161, wherein at least part of the thermal diluent is delivered to the combustor at a plurality of spaced locations positioned asymmetrically relative to the combustor axis.

193. (New) The method of claim 161, wherein at least part of the thermal diluent is delivered to the combustor at an angle having a tangential component relative to a wall of the combustor.

194. (New) The method of claim 161, wherein at least part of the thermal diluent is delivered into the combustor at an angle having an axial component relative to a wall of the combustor.

195. (New) The method of claim 161, wherein the combustor includes an equilibration chamber located downstream of the combustion chamber, and further including the step of retaining the energetic fluid in the equilibration chamber for sufficient dwell time to allow the energetic fluid to approach an equilibrium composition to a desired degree.

196. (New) The method of claim 195, further including the step of bringing the fluid downstream of the combustion chamber to a desired degree of equilibration.

197. (New) The method of claim 161, further including the step of controlling the delivery of the fluids to the combustor so the energetic fluid is delivered through the combustor outlet at a desired temperature.

198. (New) The method of claim 161, wherein the step of controlling the delivery of the fluids includes controlling the temperature of at least one of the delivered fluids.

199. (New) The method of claim 161, wherein the step of controlling the delivery of the fluids includes controlling the fluid temperature of the combusting fluid and/or the energetic fluid.

200. (New) The method of claim 161, wherein the delivery of the fluids is controlled so that a desired value is obtained for at least one of the peak temperature, the mean temperature, and the temperature profile of the fluid in the combustor.

201. (New) The method of claim 161, wherein the delivery of the fluids to the combustor is controlled to constrain the temperature of the energetic fluid to be between about 399°C (750°F) and about 1426°C (2600°F).

202. (New) The method of claim 168, wherein delivery of thermal diluent is so controlled that the temperature of an outer wall of the combustor is below a desired value.

203. (New) The method of claim 161, wherein:
the combustor includes an equilibration chamber located downstream of the combustion chamber,
and
the delivery of the fluids is so controlled that the temperature of the fluid within the equilibration chamber is below about 1427°C (2600°F).

204. (New) The method of claim 161, wherein portions of the thermal diluent fluid are delivered at locations upstream and/or downstream of the location of peak temperature in the combusting fluid.

205. (New) The method of claim 161, further including the steps of:
measuring fluid temperatures in the energy conversion system at a plurality of locations; and
determining one or more of the mean temperature, peak temperature, and temperature profile of the fluid from the temperature measurements.

206. (New) The method of claim 161, further including the step of measuring temperature of at least one of the fuel, the oxygen-containing fluid, the thermal diluent fluid, the combusting fluid, the energetic fluid, and utilized energetic fluid exiting a utilization device to which the energetic fluid is provided.

207. (New) The method of claim 161, wherein the step of controlling delivery of the fluids includes the step of maintaining the temperature of the energetic fluid substantially at a desired value while varying the enthalpy flow rate of the energetic fluid.

208. (New) The method of claim 161, wherein the step of controlling the delivery of the fluids includes controlling the ratio of thermal diluent fluid to fuel according to changes in the ratio of oxygen-containing fluid to fuel to obtain a desired energetic fluid temperature.

209. (New) The method of claim 161, wherein delivery of the fluids is controlled to obtain a temperature of the energetic fluid exiting the combustor within a range of about 750°F to about 2100°F.

210. (New) The method of claim 161, wherein the delivery of the fluids is controlled to obtain a desired peak temperature of the energetic fluid near the combustor outlet independent of the rate of energy conversion in the combustor.

211. (New) The method of claim 161, wherein the step of controlling the delivery of the fluids includes controlling the flow of thermal diluent fluid in accordance with the flow of oxygen-containing fluid to obtain a desired energetic fluid temperature.

212. (New) The method of claim 161, wherein the step of controlling the delivery of the fluids includes controlling the delivery of thermal diluent to obtain a temperature of the energetic fluid exiting the combustor above about 400 degrees ° C (about 752° F).

213. (New) The method of claim 161, wherein the step of controlling the delivery of the fluids includes controlling the amount and location of the thermal diluent delivered to obtain a desired fluid temperature and/or a desired fluid temperature profile within the combustor.

214. (New) The method of claims 161, wherein the step of controlling the delivery of the fluids includes so controlling the delivery of thermal diluent that the maximum combustion temperature is below a desired value.

215. (New) The method of claim 161, wherein the temperature of the energetic fluid exiting the combustor is controlled independently of the enthalpy flow rate of the energetic fluid.

216. (New) The method of claim 161, wherein the step of controlling the delivery of the fluids further includes controlling the delivery of thermal diluent fluid to constrain the temperature of the combusting fluid and/or the energetic fluid thereby to obtain a concentration of nitrogen oxides in the energetic fluid exiting the combustor at or below a desired value.

217. (New) The method of claim 161, further including the steps of:
combusting a portion of the fuel in a first region of the combustor; and
controlling the delivery of thermal diluent fluid to maintain the fluid temperature downstream of the first region above a desired minimum, to obtain a desired level of oxidation of at least one combustible fluid component and to reduce combustible emissions to less than a desired value.

218. (New) The method of claim 161, wherein the step of controlling the delivery of the fluids includes controlling the pressure of at least one of the fluids.

219. (New) The method of claim 161, wherein the step of controlling the delivery of the fluids includes the step of controlling the rate of delivery of at least one of the fluids.

220. (New) The method of claim 161, wherein the step of controlling the delivery of the fluids includes controlling the flow rate of oxygen-containing fluid.

221. (New) The method of claim 161, further including the step of creating turbulence and mixing of the combusting fluid within the combustor by vaporization of injected thermal diluent fluid.

222. (New) The method of claim 161, wherein the thermal diluent fluid contains a substantial portion of material dissolved therein, and further including the step of substantially removing the dissolved materials.

223. (New) The method of claim 161, wherein the step of controlling the delivery of the fluids includes:
introducing a first portion of oxygen-containing fluid to the combustion chamber upstream of a first location at which combustion commences; and
introducing additional oxygen-containing fluid at a second location downstream of the first location, the quantity of oxygen-containing fluid delivered upstream of the first location being such that fuel rich combustion occurs between the first and second locations.

224. (New) The method of claim 223, wherein the step of delivering the fluids further includes delivering a portion of thermal diluent upstream of the first location.

225. (New) The method of claim 223, the step of delivering the fluids further including the step of delivering a portion of thermal diluent downstream of the first location.

226. (New) The method of claim 224, wherein the thermal diluent fluid component of the energetic fluid is substantially in a gaseous state, and constitutes a substantially larger component of the energetic fluid than the portion of the oxygen-containing fluid in excess of the stoichiometric ratio.

227. (New) The method of claim 161, further including the step of maintaining the temperature of the energetic fluid below a desired limit while independently controlling the power produced by the utilization device.

228. (New) The method of claim 161, further including the step of controlling the delivery of thermal diluent fluid to maintain the temperature of the energetic fluid below a desired limit while independently controlling the rate of thermal energy delivered through the energetic fluid.

229. (New) The method of claim 161, wherein the step of controlling the delivery of the fluids includes controlling the concentrations in the energetic fluid of one or more of unreacted oxygen, combustion products, thermal diluent fluid, and components of the oxygen-containing fluid other than oxygen.

230. (New) The method of claim 161, wherein the step of controlling the delivery of fluids includes controlling the composition and delivery of the thermal diluent fluid such that it has an enthalpy per unit mass greater than that of the oxygen-containing fluid at the fluid temperature and pressure of the energetic fluid exiting the combustor.

231. (New) The method of claim 161, further including the steps of:
delivering at least a portion of the available thermal diluent fluid into the combustion chamber;
mixing the delivered portion of thermal diluent fluid with the combusting fluid in the combustion chamber; and
controlling a dwell time for the energetic fluid in the combustor to obtain a desired composition of the energetic fluid exiting the combustor.

232. (New) The method of claim 161, wherein the step of delivering the fluids includes:
delivering a first portion of the available thermal diluent fluid into the combustion chamber;
mixing the delivered first portion of thermal diluent fluid with the combusting fluid in the combustion chamber;
delivering a second portion of the available thermal diluent fluid to the combustor downstream of the combustion chamber as part of the energetic fluid; and
controlling a dwell time for the energetic fluid in the combustor to obtain a desired composition of the energetic fluid exiting the combustor.

233. (New) The method of claim 232, wherein the energetic fluid exiting the combustor includes a selected maximum concentration of NO_x and/or CO.

234. (New) The method of claim 232, further including the step of controlling the temperature of the energetic fluid to be greater than a desired temperature for at least the dwell time in the combustor.

235. (New) The method of claim 161, wherein the energetic fluid exiting the combustor is delivered to a utilization device which employs a hot fluid in its operation.

236. (New) The method of claim 235, wherein the utilization device is an oil well.

237. (New) The method of claim 236, wherein the utilization device is a distillation tower.

238. (New) The method of claim 161, wherein the energetic fluid exiting the combustor is delivered to a utilization device which provides power for mechanical and/or thermal applications.

239. (New) The method of claim 238, wherein the utilization device includes a desalinization system.

240. (New) The method of claim 238, wherein the utilization device generates electricity.

241. (New) The method of claim 238, wherein the utilization device provides power for operating a mobile device.

242. (New) The method of claim 161, wherein the energetic fluid is delivered to a plurality of utilization devices.

243. (New) The method of claim 161, wherein desired levels of mechanical and/or thermal power of the utilization device are obtained by controlling the enthalpy flow rate.

244. (New) The method of claim 161, wherein the utilization device is a work engine, and further including the step of:
controlling the delivery of fluid into and through the combustor in relation the power output of the work engine to maintain the concentration of pollutants in the energetic fluid below a desired level.

245. (New) The method of claim 161, wherein the utilization device is a work engine, and further including the step of:
controlling the delivery of fluid into and through the combustor in relation the speed of the work engine to maintain the concentration of pollutants in the energetic fluid below a desired level.

246. (New) The method of claim 161, further including the step of controlling the delivery of fluid into and through the combustor in relation the energy conversion rate of the utilization device to maintain the concentration of pollutants in the energetic fluid below a desired level.

247. (New) The method of claim 161, further including the step of retaining combustion products in the combustion chamber for less than or equal to a selected maximum dwell time whereby the concentration of nitrogen oxides in the energetic fluid exiting the combustion chamber is below a desired value.

248. (New) The method of claim 161, wherein the combustor includes an equilibration chamber downstream of the combustion chamber, and further including the step of retaining the energetic fluid in the equilibration chamber for less than or equal to a selected maximum dwell time to obtain a desired concentration of nitrogen oxides in the energetic fluid exiting the combustor.

249. (New) The method of claim 161, wherein the delivery of the fluids is so controlled that the energetic fluid exiting the utilization device contains less than 3 ppm NO_x.

250. (New) The method of claim 161, wherein the delivery of the fluids is so controlled that the energetic fluid exiting the utilization device contains less than 3 ppm CO.

251. (New) The method of claim 161, wherein the delivery of the fluids is so controlled that the energetic fluid exiting the utilization device contains less than 8 ppm NOx and less than 8 ppm CO.

252. (New) The method of claim 161, further including the step of exchanging thermal energy between the oxygen-containing fluid and the thermal diluent fluid prior to combustion.

253. (New) The method of claim 161, further including the step of heating the thermal diluent fluid before it is mixed with other fluids.

254. (New) The method of claim 253, wherein, the oxygen-containing fluid is heated by passing it through a heat exchanger thermally coupled to receive heat from the combustion chamber.

255. (New) The method of claim 254, further including the step of heating oxygen-containing fluid before combustion by transferring heat thereto from the heated thermal diluent fluid.

256. (New) The method of claim 254, wherein at least a portion of the heated thermal diluent fluid is mixed with the oxygen-containing fluid upstream of the combustor.

257. (New) The method of claim 161, wherein the step of controlling delivery of the fluids includes controlling the delivery of at least one of the fluids independently of the others.

258. (New) The method of claim 101, wherein temperature in the combustor is controlled by delivery of thermal diluent independently of the ratio of oxygen to fuel.

259. (New) The method of claim 161, wherein the combustion temperature and/or the temperature of the energetic fluid exiting the combustor are controlled independently of the air to fuel ratio.

260. (New) The method of claim 161, wherein the air to fuel ratio, the combustion temperature, the combustor temperature profile, and the temperature of the energetic fluid near the combustor exit are each controlled independently.

261. (New) The method of claim 161, wherein the locations at which thermal diluent is delivered to the combustor and the amount of thermal diluent delivered are controlled independently.

262. (New) The method of claim 161, wherein the temperature of the thermal diluent fluid is controlled independently of the amount of thermal diluent delivered to the combustor.

263. (New) The method of claim 161, wherein the fuel is comprised of combustible compounds containing at least carbon and hydrogen.

264. (New) The method of claim 161, wherein the fuel is selected from the group consisting of gasoline, diesel fuel, heating oil, well-head oil, propane, methane, natural gas, ethanol, and combinations thereof.

265. (New) The method of claim 161, wherein the fuel comprises one or more hydrocarbons and/or one or more alcohols.

266. (New) The method of claim 161, wherein a portion of the thermal diluent is delivered to the combustor mixed with the fuel, and/or emulsified with the fuel.

267. (New) The method of claim 161, wherein at least a portion of the thermal diluent fluid is water.

268. (New) The method of claim 161, wherein the thermal diluent fluid is substantially entirely water.

269. The method of claim 161, wherein the thermal diluent fluid is water including dissolved solid material.

270. (New) The method of claim 268, wherein the oxygen-containing fluid is heated by heat exchange with hot gases exiting the combustor.

271. (New) The method of claim 161, further including the steps of:
cooling the energetic fluid exiting the utilization device;
condensing at least a portion of the thermal diluent fluid from the cooled energetic fluid; and
recovering at least a portion of the condensed thermal diluent fluid.

272. (New) The method of claim 271, further including the steps of:
recompressing the unrecovered portion of the cooled energetic fluid to at least ambient pressure; and
exhausting the recompressed unrecovered energetic fluid.

273. (New) The method of claim 271, wherein the amount of recovered thermal diluent fluid is at least equal to the amount of thermal diluent fluid delivered upstream of the combustor exit.

274. (New) The method of claim 271, wherein the thermal diluent fluid is water.

275. (New) The method of claim 271 further including the step of purifying at least part of the recovered thermal diluent fluid before re-delivery to the combustor.

276. (New) The method of claim 271 wherein the recovered thermal diluent fluid is potable water.

277. (New) The method of claim 161, further including the steps of:
recovering a portion of the energetic fluid from an outlet of the utilization device; and
recirculating the recovered portion of the energetic fluid for re-delivery to the combustor.

278. (New) The method according to claim 161, wherein at least a portion of the delivered thermal diluent fluid comprises non-potable water, and further comprising the steps of:

vaporizing at least a portion of the thermal diluent fluid as a component of the energetic fluid;
condensing at least a portion of the thermal diluent vapor from the energetic fluid downstream of the
combustor; and
recovering at least a portion of the condensed thermal diluent fluid as potable water.

279. (New) The method according to claim 278, wherein the potable water is condensed
downstream of at least one utilization device which extracts energy from the energetic fluid.

280. (New) The method of claim 278, further including the step of combusting at least a
portion of any combustible contaminants in the non-potable water within the combustor.

281. (New) The method of claim 280, further including the step of removing at least a
portion of any non-combustible contaminants contained in the non-potable water.

282. (New) The method of claim 161, further including the step of controlling the
combustion temperature by independently controlling the delivery of thermal diluent and the ratio
of oxygen containing fluid to fuel.

283. (New) The method of claim 161, wherein the delivery of the fluids is controlled so that
the temperature of the combustion chamber inner wall is above a desired value.

284. (New) The method of claim 161, wherein the controller is operative to control the
delivery of the fluids so that the temperature of the energetic fluid exiting the combustor is within
a selected range.